

WE CLAIM:

1. A method for identifying a cellular component to which a small molecule is capable of binding, comprising:
 - (a) providing a hybrid ligand consisting essentially of two ligands linked together, wherein one ligand has specificity for a predetermined target and forms an irreversible (covalent) bond therewith; and a second ligand that is the small molecule;
 - (b) introducing the hybrid molecule into a sample containing an environment, the environment having;
 - (i) a first expression vector, including DNA encoding the target for said one ligand, linked to a coding sequence for a first transcriptional module for expression as a first hybrid protein;
 - (ii) a second expression vector including a random DNA fragment encoding a polypeptide linked to a second transcriptional module for expression as a second hybrid protein; and
 - (iii) a third vector including a reporter gene wherein the expression of the reporter gene is conditioned on the proximity of the first and second hybrid proteins;
 - (c) permitting the hybrid molecule to bind covalently the first hybrid protein through said one ligand, and the second hybrid protein through said second ligand so as to activate the expression of the reporter gene; and
 - (d) identifying those samples expressing the reporter gene,
2. A method according to Claim 1 which further comprises
 - (e) characterizing the second hybrid protein in the samples identified in (d) so as to determine the cellular component to which the small molecule has a binding affinity. transcriptional activator.
3. A method according to Claim 1 which further comprises
 - (e) characterizing said second ligand so as to identify the small molecule capable of binding the molecular target.